

# ASSIGNMENT 6

Textbook Assignment: "Concrete and Masonry." Pages 7-1 through 7-34.

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- 6-1. Concrete is a synthetic construction material made by properly mixing together which of the following ingredients?
1. Water and cement only
  2. Water, cement, and sand only
  3. Water, cement, and gravel only
  4. Water, cement, sand, and gravel or crushed stone
- 6-2. What is the name of the chemical reaction responsible for the hardening of concrete?
1. Dehydration
  2. Hydration
  3. Oxidation
  4. Deoxidation
- 6-3. The chemical reaction that causes concrete to harden occurs between which of the following ingredients?
1. Cement and sand
  2. Cement and gravel
  3. Cement and water
  4. Gravel and sand
- 6-4. What factor controls the strength, durability, and watertightness of concrete?
1. The amount of sand
  2. The size and shape of the coarse aggregate
  3. The proportion of sand to gravel
  4. The proportion of water to cement
- 6-5. The tensile strength of concrete, in comparison to compressive strength, is
1. higher
  2. lower
  3. approximately the same
- 6-6. To ensure that concrete is watertight as possible, you should take which of the following actions?
1. Add more water
  2. Add less water
  3. Use only the amount of water required to attain the necessary workability
  4. Add more sand to fill any voids
- 6-7. The extent to which concrete resists deterioration caused by exposure to service conditions is called
1. strength
  2. compressibility
  3. flexibility
  4. durability
- 6-8. Which of the following materials are placed in concrete to produce reinforced concrete?
1. Steel bars
  2. Steels rods
  3. Steel strands, wire, and welded wire mesh
  4. All of the above
- 6-9. What reinforced concrete structural member supports and distributes building loads to the ground?
1. Plain slab
  2. Footing
  3. Beam
  4. column
- 6-10. In addition to the principal reinforcement, what other steel reinforcing is used in tied columns?
1. Vertical reinforcing
  2. Lateral ties
  3. Spiral reinforcing
  4. Mats
- 6-11. The diameter of reinforcing bars increase from one size to the next by what increment?
1. 1/16 in
  2. 1/8 in
  3. 1/4 in
  4. 3/8 in
- 6-12. Where, if anywhere, in a simple beam (a beam resting freely on two supports near its ends) is there NO stress?
1. Top
  2. Bottom
  3. Exact center
  4. Nowhere; all areas have some stress

- 6-13. When a reinforcing bar is bent too sharply, what might occur?
1. The bar would crack or be weakened
  2. The bar will not adhere to the concrete
  3. Concrete strength would be reduced
  4. Hydration would not occur
- 6-14. When not dimensioned on the drawings, what is the minimum length of a lap splice for (a) No. 3 bars and (b) No. 6 bars?
1. (a) 11.25 in (b) 22.50 in
  2. (a) 12.00 in (b) 22.50 in
  3. (a) 22.50 in (b) 12.00 in
  4. (a) 22.50 in (b) 11.25 in
- 6-15. What pattern sizes are available in square pattern welded-wire fabric?
1. 1 by 1 in, 2 by 2 in, and 3 by 3 in
  2. 2 by 2 in, 3 by 3 in, 4 by 4 in, and 5 by 5 in
  3. 2 by 2 in, 3 by 3 in, 4 by 4 in, and 6 by 6 in
  4. 3 by 3 in, 5 by 5 in, and 6 by 6 in
- 6-16. When concrete structural members are fabricated at locations other than the final position of use, they are known by what term?
1. preconstructed
  2. Cast-in-place
  3. Prefabricated
  4. Precast
- 6-17. What term is concrete cast in its final position of use known by?
1. Preconstructed
  2. Cast-in-place
  3. Prefabricated
  4. Precast

IN ANSWERING QUESTIONS 6-18 THROUGH 6-21, SELECT THE PRECAST STRUCTURAL MEMBER FROM THE FOLLOWING LIST WHICH BEST FITS THE USE DESCRIBED.

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|---|
| A. FLOOR OR ROOF DECK<br>B. DECK PANEL FOR A LARGE PIER<br>c. INSULATED EXTERIOR WALL |
|---|

- 6-18. Tongue-and-groove panel.

1. A
2. B
3. C

- 6-19. Sandwich panel.

1. A
2. B
3. C

- 6-20. Double-T slab.

1. A
2. B
3. C

- 6-21. Channel slab.

1. A
2. B
3. C

- 6-22. What terms correctly refer to the small, closely spaced beams used in (a) floor and (b) roof construction?

1. (a) Joists (b) purlins
2. (a) Joists (b) joists
3. (a) Purlins (b) purlins
4. (a) Purlins (b) joists

- 6-23. What primary difference, if any, exists between the beams and girders?

1. Beams are shorter than girders
2. Beams are used for different purposes than girders
3. Beams are made of different material than girders
4. Nothing; they are the same

- 6-24. Unless the ends of beams are rectangular, most of them will be of what cross-sectional shape?

1. Single T
2. Double T
3. I
4. C

- 6-25. In hollow precast columns, what material is put in the core to help hold the column upright?

1. Concrete
2. Looped rod
3. Grout
4. Heavy cardboard

- 6-26. Of the following advantages of precasting identical concrete members, which is considered to be the most important?

1. Less required storage space
2. Faster erection time
3. Reusable forms
4. Quality-controlled concrete

6-27. Of the following descriptions, which most accurately describes pretensioning of concrete members?

1. After the concrete has been placed and has reached a specified strength, reinforcement strands are pulled through formed channels, and a predetermined amount of stress is applied
2. Reinforcement strands are pulled through inflated tubes and are stressed before placement of the concrete
3. Reinforcement strands are stressed to a predetermined point before placement of the concrete and are released just before the concrete has set
4. Reinforcement strands are placed in the forms and are stressed to a predetermined point before the concrete is placed; the strands are then released after the concrete has reached a specified strength

6-28. In what part of a prestressed beam does the tensioned steel produce high compression?

1. Upper
2. Lower
3. Exact center
4. Approximate center

6-29. What condition occurs when a load (force) is placed on a prestressed beam?

1. The camber is forced out, leaving a beam with positive deflection
2. The upward bow is increased
3. The camber is forced out, leaving a level beam with no deflection
4. The upward bow is forced out, creating deflection in the beam

6-30. What is the approximate weight of conventional concrete?

1. 175 lb/cu ft
2. 150 lb/cu ft
3. 130 lb/cu ft
4. 115 lb/cu ft

- A. HEAVYWEIGHT CONCRETE
- B. SEMI-LIGHTWEIGHT CONCRETE
- C. INSULATING LIGHTWEIGHT CONCRETE
- D. STRUCTUTWL LIGHTWEIGHT CONCRETE

6-31. Weighs 115 to 140 lb/cu ft and has a compressive strength comparable to normal concrete.

1. A
2. B
3. C
4. D

6-32. Weighs 20 to 70 lb/cu ft and is used for fireproofing.

1. A
2. B
3. C
4. D

6-33. Weighs up to 400 lb/cu ft.

1. A
2. B
3. C
4. D

6-34. Weighs up to 115 lb/cu ft and is used to decrease the dead-load weight of structural members.

1. A
2. B
3. C
4. D

6-35. Normally has a compressive strength of 1,000 psi or less.

1. A
2. B
3. C
4. D

6-36. In what type of construction are concrete walls poured horizontally, lifted upright, and then secured in place?

1. Tilt-up
2. Lift-up
3. Cast-in-place
4. Prefab

6-37. In tilt-up panel construction, where is additional reinforcement generally needed?

1. At the top
2. At the bottom
3. Around the edges
4. Around any openings

IN ANSWERING QUESTIONS 6-31 THROUGH 6-35, SELECT THE TYPE OF CONCRETE FROM THE FOLLOWING LIST THAT BEST MATCHES THE CHARACTERISTIC GIVEN.

- 6-38. For what purpose are inserts placed in the tilt-up panels?
1. For vertical support
  2. For picking up or tilting
  3. For extra reinforcement
  4. For horizontal support
- 6-39. In a tilt-up panel, the inserts are installed in what manner?
1. Independent of the reinforcement
  2. Tied to reinforcement
  3. Welded to reinforcement
  4. Tied to the panel forms
- 6-40. What is the strongest method of connecting panels together?
1. A butted connection using grout or gasket
  2. A cast-in-place column with the panel-reinforcing steel tied into the column
  3. Steel columns welded to steel angles or plates secured in the panel
  4. Precast columns tied with the panel
- 6-41. To provide waterproofing in all panel joints, you should use what material?
1. Heavy plastic film
  2. Heavy asphalt-laminated barriers
  3. Polyethylene (6-mil)
  4. Expansion joint
- 6-42. What is the purpose of contraction joints?
1. To prevent buckling due to expansion of the reinforcing steel caused by temperature changes
  2. To prevent cracking due to shrinkage of the reinforcing steel
  3. To prevent cracking due to shrinkage caused by temperature changes
  4. To prevent buckling due to expansion of the concrete caused by temperature changes
- 6-43. Expansion joints are also known as what kind of joints?
1. Construction
  2. Shrinkage
  3. Contraction
  4. Isolation
- 6-44. Placing plastic concrete into spaces enclosed by forms is referred to by what term?
1. Casting
  2. Precasting
  3. Molding
  4. Premolding
- 6-45. The part of a wall form that shapes and retains the concrete until it sets is known by what term?
1. Brace
  2. Wale
  3. stud
  4. Sheathing
- 6-46. In formwork, what devices are usually used to reinforce wall forms against concrete displacement?
1. Sheathing
  2. Wales
  3. Ties
  4. Spreaders
- 6-47. Which of the following devices combines the functions of wire ties and wooden spreaders?
1. Tie holder
  2. Snap tie
  3. Tie spreader
  4. Bar tie
- 6-48. What type of wall-form tie consists of an inner section and two threaded outer sections?
1. Snap tie
  2. Bar tie
  3. Tie rod
  4. Tie spreader
- 6-49. For concrete column forms, (a) what is the name of the members that brace against bursting pressure, and (b) where is the bursting pressure greatest?
1. (a) Ties (b) middle
  2. (a) Yokes (b) top
  3. (a) Yokes (b) bottom
  4. (a) Ties (b) top
- 6-50. In masonry construction, what is the most common concrete masonry unit used?
1. Concrete block
  2. Clay tile
  3. Stone
  4. Brick

- 6-51. Which of the following requirements for concrete blocks measures the ability to carry loads and withstand structural stresses?
1. Absorption
  2. Moisture content
  3. Density
  4. Compressive strength
- 6-52. What is the actual size, in inches, of an 8- by 8- by 16-inch CMU?
1. 7 1/2 by 7 1/2 by 15 1/2
  2. 7 5/8 by 7 5/8 by 15 5/8
  3. 8 by 8 by 16
  4. 8 1/4 by 8 1/4 by 16 1/4
- 6-53. In concrete masonry construction, what part of the block is the face shell?
1. Material that forms the partitions between the cores
  2. Holes between the webs
  3. Long sides of the block unit
  4. Recessed end of the block units
- 6-54. To minimize cutting and fitting, you should maximize modular planning by the use of which of the following size of block units?
1. Full-size units only
  2. Half-size units only
  3. Full-size and quarter-size units
  4. Full-size and half-size units
- 6-55. Which of the following parts is best described as the solid side of a building tile?
1. Shell
  2. Web
  3. Cell
  4. Core
- 6-56. In addition to the thickness of the shell and webs of tile, the compressive strength of tile depends upon which of the following factors?
1. Materials used and method of manufacture
  2. The opening and cell size
  3. Its resistance to abrasion
  4. Its resistance to deterioration
- 6-57. When building tiles are used in construction that is exposed to the weather, mortar should be prepared only from which of the following materials?
1. Waterproofed cement
  2. Portland cement-lime
  3. Masonry cement
  4. Both 2 and 3 above
- 6-58. The use of structural load-bearing tile is restricted by which of the following factors?
1. Fire rating of the tiles
  2. Weight and sizes of the tiles
  3. Availability of the material
  4. Building codes and specifications
- 6-59. Which of the following stone masonry descriptions best describes the term "rubble"?
1. The faces of stone are square and placed in position so the finished surfaces will present a continuous plane surface appearance
  2. The stones used are left in their natural state without any kind of shaping
  3. The stones are unprocessed and laid in courses without consideration of size or weight
  4. The stones are roughly squared and laid in such a manner to produce approximately continuous horizontal bed joints
- 6-60. Of the following types of stonework, which one is considered to be the crudest?
1. Coursed ashlar
  2. Coursed rubble
  3. Random ashlar
  4. Random rubble
- 6-61. Which, if any, of the following materials is used in mortar mix to prevent staining of the stones?
1. Ordinary portland cement
  2. White portland cement
  3. Lime added to the mixed cement
  4. None of the above
- 6-62. What standard dimensions, in inches, are of building brick?
1. 1 1/4 by 3 3/4 by 8
  2. 1 1/2 by 3 3/4 by 8
  3. 1 3/4 by 3 3/4 by 8
  4. 2 1/4 by 3 3/4 by 8
- 6-63. Common brick is best described as
1. unglazed, uniform in color, and made from select clay
  2. unglazed, variable in color, and made from inferior clay
  3. unglazed, variable in color, and made from pit-run clay
  4. glazed, uniform in color, and made from select clay

- 6-64. Brick that is designed to withstand exposure to below-freezing temperatures in a moist climate is what classification?
1. SW
  2. MW
  3. NW
  4. MC
- 6-65. Which of the following types of brick should be used as the backing course for a cavity wall?
1. Face
  2. Kiln-run
  3. Glazed
  4. Fire
- 6-66. What type of brick is made of special clay and is designed to withstand high temperatures?
1. Press
  2. Clinker
  3. Glazed
  4. Fire
- 6-67. Structural bonding of brick walls causes the entire assembly to act as a single unit. This method of bonding is accomplished by which of the following means?
1. Adhesion of grout to adjacent wythes of masonry
  2. Embedding metal ties in connecting joints
  3. Interlocking of the masonry units
  4. All of the above
- 6-68. The simplest pattern bond made up entirely of stretchers is referred to by what name?
1. Stack
  2. Common
  3. Running
  4. English
- 6-69. In which of the following pattern bonds must you place a three-quarter brick at the corner of each header course?
1. Common
  2. English
  3. Block
  4. Stack
- 6-70. An English bond pattern wall is composed of alternate courses of what types of brick?
1. Three-quarter and blind headers
  2. Stretchers and bull-headers
  3. Headers and stretchers
  4. Headers and rigid steel ties
- 6-71. In masonry construction, which of the following statements best describes the term "soldier"?
1. A unit laid flat with its longest dimension perpendicular to the wall
  2. A brick laid on its end so that its longest dimension is parallel to the vertical axis of the face of the wall
  3. A unit laid with its longest dimension parallel to the face of the wall
  4. One of the continuous horizontal layers of masonry which, bonded together, form the masonry structure